

"6. When seen in the nest the Loläch is of a light brownish colour, its skin is soft and slimy, being coated with a similar substance to that with which it lines the clay walls of its house. On being exposed to the light, it soon becomes dark coloured and the skin dry and hard.

"7. No signs whatever of a tube of gelatinous material appear either in the nest or in the channel leading outward to the opening, and the lips of the fish seem to be completely covered with the tail that is brought over the mouth.

"8. The centre of the swamp, where the deepest water is, seems to be a more favoured part for the nests than in the shallow coasts. One nest that I dug out had an exceedingly long and tortuous channel, the bottom of the nest being twenty inches below the surface and three feet away from the opening. I believe it to be an exception.

"On the rising of the water they push out the plug, and remain for a little while with their noses out, before they finally leave their winter home."

Mr. G. A. Boulenger, F.R.S., gave an account of the Fishes collected by Dr. J. Bach in the Rio Jurua, Brazil. Fifty-one species were enumerated, of which nine were described as new, and named as follows:—*Platystoma juruense*, *Oxydoras trimaculatus*, *O. trachyparia*, *O. bachi*, *O. elongatus*, *Chatostomus bachi*, *Acestra gladius*, *Cetengraulis juruensis*, and *Sternarchus tamandua*.

This paper will be published in full in the Society's 'Transactions.'

The following papers were read:—

1. On the Anatomy of an Australian Cuckoo, *Scythrops nova-hollandiæ*¹. By FRANK E. BEDDARD, M.A., F.R.S., Prosector to the Society.

[Received December 7, 1897.]

So far as I can discover there is no account extant of the structure of the soft parts of *Scythrops nova-hollandiæ*, save a few very brief notes on a "Bird, of the Toucan-kind, from New Holland," by John Hunter², and some facts concerning the pterylosis by Nitzsch³. Certain parts of the skeleton, on the other hand, are dealt with in Eyton's 'Osteologia Avium,' and the skull has been described by Parker⁴.

¹ I am indebted for the specimens, upon the examination of which this communication is founded, to the kindness of Mr. A. J. North, C.M.Z.S., of the Australian Museum.

² 'Essays and Observations, &c.,' ed. by R. Owen, London, 1861, vol. ii. p. 286.

³ 'Pterylography,' Engl. ed. by Slater, Ray Soc. Publ.

⁴ Trans. Linn. Soc. (2) vol. i.

§ *External Characters and Pterylosis.*

This Cuckoo has a small nude oil-gland. There are 10 rectrices. The fifth remex is not missing; the bird is therefore quincubital. The pterylosis has, as already mentioned, been described by Nitzsch; and I have not much to add to his account. The ventral tract, however, appears to me to bifurcate at the commencement of the breast; each half then, as in *Centropus* &c.¹, again divides into an inner and outer branch. I find these two branches more distinct than they are figured by Nitzsch, while their point of rejunction is beyond the posterior margin of the sternum and is not very conspicuous. On the dorsal surface of the body the median apterion is distinct but narrow; there is no break between the anterior and posterior portions of the dorsal tracts, such as occurs in some Cuckoos.

§ *Muscular Anatomy.*

In dissecting the muscles of this bird the first point to which I attended was the arrangement of the *muscles of the thigh*. Garrod² divided the Cuculidæ into two groups, one with the muscular formula ABXY+, the other with the reduced formula AXY+. Garrod's list was afterwards extended by myself³. *Scythrops* belongs (as I expected that it would, after an examination of the pterylosis) to the former group. It has the complete muscle-formula, both femoro-caudal and accessory femoro-caudal being large and fleshy. They fuse early and are inserted in common.

The *ambiens* is large and conspicuous.

The *gluteus primus* extends beyond the acetabulum.

There is one other point in the structure of the hind limb to which I desire to direct attention. Garrod⁴ described the *deep flexor tendons* of the Cuculidæ as "Gallinaceous," *i. e.* the tendon of the flexor longus hallucis is united to the common tendon of the flexor profundus by a vinculum. This statement has been copied as applying generally to the Cuckoos. It does certainly apply to a large number, including *Scythrops*. But the late W. A. Forbes found that in *Centropus* and *Pyrrhocentor* the flexor longus hallucis is totally absent.

As to the muscles of the fore limb I have nothing of interest to record. The *tensor patagii brevis* tendon is simple and undivided; it is reinforced by no biceps slip.

The *expansor secundariorum* is present. The *anconæus longus* sends off a tendinous slip to the humerus as in most Cuckoos.

§ *Visceral Anatomy.*

On opening the body-cavity of *Scythrops* an arrangement of

¹ Beddard, "On the Structural Characters and Classification of the Cuckoos," P. Z. S. 1885, p. 168.

² "On certain Muscles of the Thigh of Birds, &c.," P. Z. S. 1873, p. 626.

³ *Loc. cit.*

⁴ "On the Disposition of the Deep Plantar Tendons in different Birds" P. Z. S. 1875, p. 339.

certain of the membranes partitioning the cœlom was observed that is not at all common among birds. The two liver-lobes were concealed behind transverse partitions extending across the body-cavity. On the right side of the body the partition was denser than on the left, with tough strands of connective tissue running in it. Anteriorly these vertical transverse partitions are attached, like the oblique septa and the umbilical ligament, to the pericardium. A structure of this kind seems to have been up to the present only met with in certain Picarian birds, in Owls and in Parrots. It seems now to be the prevalent opinion that the Owls, Parrots, and Coccoyges are not so far away from the Pico-Passerine division as Garrod attempted to prove.

As to the *alimentary tract* the gizzard is large; the intestines are capacious but short, the measurements being as follows:—Large intestines 4·5 inches; small intestines 20 inches; cæca 6·5 inches.

Of the two lobes of the liver the right is very much the larger. There is a gall-bladder.

The organ of chief classificatory importance, however, among the viscera is the *syrinx*. The syrxinx is of quite the typical tracheo-bronchial form, the intrinsic muscles being attached to the second bronchial semiring. The *membrana tympaniformis* is well developed. The *bronchidesmus* is incomplete, *i. e.* it does not extend up to the junction of the bronchi.

The structure of the syrxinx, therefore, combined with the characteristics of the pterylosis and the muscles of the leg, shows that *Scythrops* is an ally of *Eudynamis* and *Phœnicophaes*.

§ *The Skeleton.*

The skull of *Scythrops* has been studied by the late Prof. Parker¹, who, however, did not compare it much with the skull of other Cuckoos. I have compared *Scythrops* with the following genera: *Cuculus*, *Coccytes*, *Centropus*, *Pyrrhocentor*, *Crotophaga*, *Saurothera*, *Piaya*, *Gvira*, *Geococcyx*, *Diplopterus*, *Eudynamis*, *Phœnicophaes*, and *Rhinococcyx*.

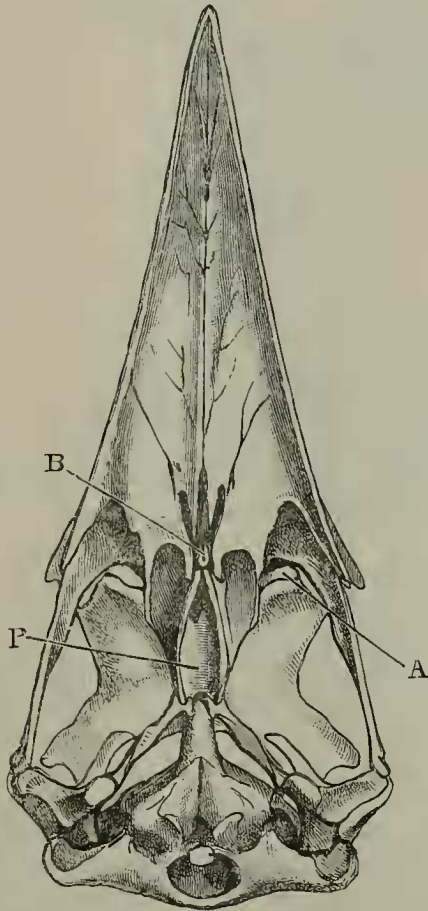
The skull is not only larger than in any of the Cuckoos mentioned, but it is more massively constructed. This is seen especially in the face region. The external parts, for instance, are more reduced than in any other Cuckoo. In no Cuckoos are the external nares extensive, and in all they are impervious save in *Cuculus* and *Pyrrhocentor*, where the osseus septum is partly defective. In *Scythrops* they are relatively very small round orifices, immediately and almost completely occluded by a flap of bone running obliquely inward. In *Crotophaga* the nares are nearly as much reduced.

The massiveness of the skull is also seen in the interorbital septum, which is complete, save that the optic foramina are fused into one. In all other Cuckoos there are one or more vacuities in the bony wall. The large massive bill has also brought about a

¹ *Op. cit.*

more than usually strongly desmognathous palate (fig. 1). The maxillo-palatines are fused for their entire length, though grooved and even fenestrated in the middle. The palatines are completely fused together posteriorly, where the external lamina is absent. In front the two bones gradually get broader and diverge from

Fig. 1.

Skull of *Scythrops*, ventral view.

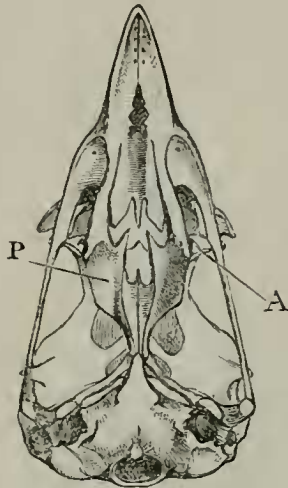
A, os uncinatum ; B, vomer ; P, junction of palatines.

each other. The internal edges of the palatines converge in front and nearly meet where a small splint of bone (a vomer) is wedged between them. The palatine bones are very deep, the ascending lamina being large. The pterygoids are hammer-shaped bones, their junction with the palatines being expanded in a vertical direction.

In other Cuckoos the palatines have not a well-developed ascending lamina, there is no fusion posteriorly or approximation

anteriorly between these bones (see fig. 2), while they diminish instead of slightly increasing in diameter from behind forward. Finally, the pterygoids are not expanded in other Cuckoos in a vertical direction at their junction with the palatines, and the

Fig. 2.

Skull of *Eudynamis*.

A, os uncinatum ; P, palatine.

maxillo-palatines are incompletely fused behind. The lacrymal bones in *Scythrops* are large, the descending process nearly reaching the jugal ; between the descending limb of the lacrymal and the massive ectethmoid process is an intercalated bonelet—the *os uncinatum*, duly referred to by Parker. I have found these bones also in *Eudynamis*¹ (cf. figs. 3 & 4, p. 49), where they are larger than in (my specimen of) *Scythrops* and very nearly reach the palatines. Shufeldt has denied their existence in *Geococcyx*².

Among the other genera of Cuckoos that I have examined it is only *Eudynamis* and certain other American genera (viz. *Crotophaga*, *Gura*, *Diplopterus*, and *Geococcyx*) that have a massive descending process of the lacrymal.

In *Saurothera* and in other Old World genera³ this process is short, or, if long, a slender style.

Scythrops has fourteen cervical vertebræ, of which the last three bear ribs progressively increasing in size, those on the 12th being

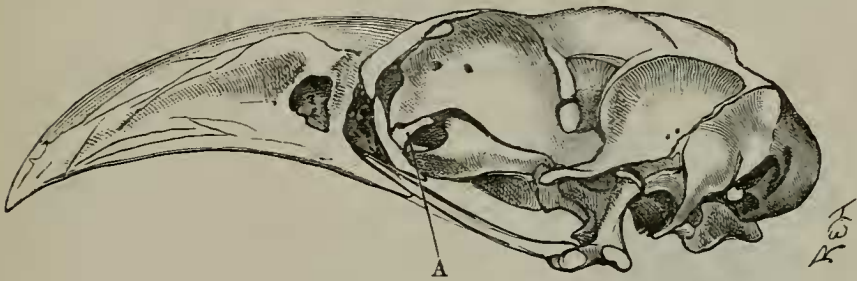
¹ I take this opportunity of mentioning that *Eudynamis* has better rudiments of basiptyergoid processes than any Cuckoo which I have examined, except *Rhinococcyx*. This is noteworthy in view of the possibly archaic characters of the Phœnicophainæ with complete muscular formula of leg and tracheo-bronchial syriux.

² "Contributions to the Anatomy of *Geococcyx californianus*," P. Z. S. 1886 p. 488.

³ ? as to *Centropus*.

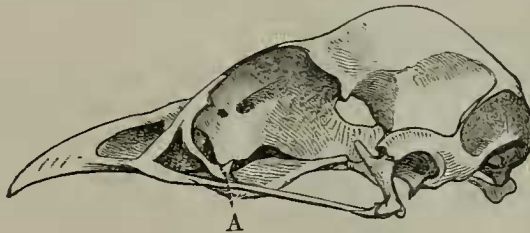
very minute. Contrary to what is found in many Cuckoos¹ the atlas is notched, not perforated, for the odontoid process; the notch,

Fig. 3.



Skull of *Scythrops*, lateral view.
A, os uncinatum.

Fig. 4.



Skull of *Eudynamis*, lateral view.
A, os uncinatum.

however, is very nearly converted into a perforation. Four ribs reach the sternum, the vertebra bearing the last complete rib being the last free dorsal.

2. On a Collection of Lepidoptera made by Mr. F. V. Kirby, chiefly in Portuguese East Africa. By ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S., &c., Senior Assistant-Keeper, Zoological Department, British Museum.

[Received November 29, 1897.]

The collection of which the following is an account is chiefly of interest because of the care with which most of the specimens have been labelled, and from the fact that the supposed dry- and wet-season forms of some of the species were both secured. There are also several forms which are by no means common in collections, and an interesting extreme form of *Alaena nyassæ*, var. *ochracea*,

¹ *Rhinococcyx*, *Cuculus*, *Saurothera*. In *Eudynamis*, *Guira*, and *Diplopterus* there is a notch nearly converted into a foramen.